

State/Industry Network

Air Quality Report

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## SECTION ONE

### DISCUSSION OF MONITORING RESULTS

### Sulfur Dioxide (SO<sub>2</sub>)

There were no exceedances of either the State or Federal standards during the quarter. The maximum 1-hour concentration was 162 ppb on October 29 at Mandan Refinery - SPM; the maximum 3-hour concentration was 148 ppb on December 17 at Mandan Refinery - SPM; and, the maximum 24-hour concentration was 79 ppb on December 17 at Mandan refinery - SPM. All sites achieved at least an 80% data recovery for the period operated except Koch-MGP #3.

Koch -MGP #3 failed to achieve 80% data recovery due to not performing required bi-weekly quality assurance checks.

Koch Hydrocarbon sold the McKenzie Gas Plant to Bear Paw Energy, Inc., on December 20, 1996.

### Sulfur Dioxide (SO<sub>2</sub>) 5-Minute Average

The maximum 5-minute concentration was 241 ppb on December 7 at Mandan - Refinery. Less than 80% of the data was collected due to problems with a new data acquisition program.

### Hydrogen Sulfide (H<sub>2</sub>S)

There were three exceedances of the H<sub>2</sub>S standards during the quarter at Whiskey Joe - SPM. The maximum 1-hour concentration was 300 ppb on October 17 at Whiskey Joe - SPM; the maximum 24-hour concentration was 49 ppb on November 1 at Whiskey Joe - SPM; the maximum 3-month concentration was 12 ppb in October at Whiskey Joe - SPM. All sites except Koch -MGP #4 achieved at least an 80% data recovery for the period operated.

Koch -MGP #4 failed to meet the 80% data recovery due to not performing required bi-weekly quality assurance checks.

The three 1-hour exceedances at Whiskey Joe - SPM were caused by the Federal 1-7 well owned by Slawson Exploration, Inc., southeast of the monitoring site. A Notice of Violation was issued to Slawson Exploration, Inc., on January 16, 1997.

### Ozone (O<sub>3</sub>)

There was no exceedance of the ozone standard during the quarter. The maximum observed 1-hour concentration was 47 ppb on October 8 at Sharon. The maximum 8-hour concentration was 42 ppb at Fargo Residential on October 14. All sites achieved at least an 80% data recovery for the period operated.

The Beulah and TRNP - NU analyzers were shut down for the winter effective September 30.

### Nitrogen Dioxide (NO<sub>2</sub>)

The maximum 1-hour concentration observed was 71 ppb on October 13 at DGC #17. All sites achieved at least an 80% data recovery for the period operated.

### Inhalable PM<sub>2.5</sub> Particulates

The maximum 24-hour average concentration was 27.4 µg/m<sup>3</sup> on November 5 at Beulah. Both sites achieved at least an 80% data recovery for the period operated.

### Inhalable PM<sub>10</sub> Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 96.3 µg/m<sup>3</sup> on October 12 at Grand Forks - North. All sites achieved at least an 80% data recovery for the period operated.

### Inhalable PM<sub>2.5</sub> Sulfates (SO<sub>4</sub>)

Sulfate analysis on PM<sub>2.5</sub> filters was initiated on January 4 on filter sets for which the Chemistry Lab could establish a filter background sulfate concentration. The purpose for sulfate analysis is to aid the Department in assessing the impact of SO<sub>2</sub> emissions on Inhalable particulate concentrations and visibility. Fourth quarter is the first quarter in which all filters used were from filter sets with background concentrations. The maximum 24-hour PM<sub>2.5</sub> sulfate concentration was 15.5 µg/m<sup>3</sup> on November 11 at Beulah.

### Inhalable PM<sub>10</sub> Sulfates

Sulfate analysis on PM<sub>10</sub> filters was initiated on January 4 on filter sets for which the Chemistry Lab could establish a filter background sulfate concentration. The purpose for sulfate analysis is to aid the Department in assessing the impact of SO<sub>2</sub> emissions on Inhalable particulate concentrations and visibility. Fourth quarter is the first quarter in which all filters used were from filter sets with background concentrations. The maximum 24-hour PM<sub>10</sub> sulfate concentration was 39.5 µg/m<sup>3</sup> on November 11 at Beulah.

### PM<sub>2.5</sub> Sulfate /PM<sub>2.5</sub> Analysis

The PM<sub>2.5</sub> Sulfate/PM<sub>2.5</sub> tables present statistics for PM<sub>2.5</sub> Sulfate and PM<sub>2.5</sub> total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 µg/m<sup>3</sup> for sulfate analysis; 4 µg/m<sup>3</sup> for PM<sub>2.5</sub> total mass. The statistics for the PM<sub>2.5</sub> Sulfate and PM<sub>2.5</sub> are concentrations. The statistics for the ratio are produced by evaluating the ratio of the PM<sub>2.5</sub> Sulfate concentration to the PM<sub>2.5</sub> total mass concentration for each data pair. In the individual summaries, one-half the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the PM<sub>2.5</sub> total mass concentration is less than 4 µg/m<sup>3</sup>, the PM<sub>2.5</sub> sulfate concentration can be higher than the PM<sub>2.5</sub> total mass concentration because of the effect of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of PM<sub>2.5</sub> Sulfate concentration to PM<sub>2.5</sub> total mass concentration, only data pairs where both the PM<sub>2.5</sub> Sulfate and PM<sub>2.5</sub> total mass concentrations are greater than the minimum detectable concentrations are used. The ratio calculated is the concentration of sulfate as a function of the total mass collected. When the ratio is multiplied by 100, the ratio becomes the percentage of total mass which is sulfate. The maximum PM<sub>2.5</sub> Sulfate/PM<sub>2.5</sub> ratio was at Bismarck Residential where the ratio was 0.73 (73%). The average ratio was 0.31 (31%) at Bismarck Residential.



### PM<sub>10</sub> Sulfate/PM<sub>10</sub> Analysis

These PM<sub>10</sub> Sulfate/PM<sub>10</sub> tables present statistics for PM<sub>10</sub> Sulfate and PM<sub>10</sub> total mass when both concentrations are greater than the respective minimum detectable concentration: 0.5 µg/m<sup>3</sup> for sulfate analysis; 4 µg/m<sup>3</sup> for PM<sub>10</sub> total mass. The statistics for the PM<sub>10</sub> Sulfate and PM<sub>10</sub> are concentrations. The statistics for the ratio are produced by evaluating the ratio of the PM<sub>10</sub> Sulfate concentration to the PM<sub>10</sub> total mass concentration for each data pair. In the individual summaries, one-half the minimum detectable concentration is substituted for those concentrations less than the minimum detectable value. However, when the PM<sub>10</sub> total mass concentration is less than 4 µg/m<sup>3</sup>, the PM<sub>10</sub> sulfate concentration can be higher than the PM<sub>10</sub> total mass concentration because of the effect of the variability in the sulfate analysis procedure at low concentrations. Therefore, when calculating the ratio of PM<sub>10</sub> Sulfate concentration to PM<sub>10</sub> total mass concentration, only data pairs where both the PM<sub>10</sub> Sulfate and PM<sub>10</sub> total mass concentrations are greater than the minimum detectable concentrations are used. The ratio calculated is the concentration of sulfate as a function of the total mass collected. When the ratio is multiplied by 100, the ratio becomes the percentage of total mass which is sulfate. The PM<sub>10</sub> Sulfate/PM<sub>10</sub> ratio was at Beulah where the ratio was 0.87 (87%). The maximum average ratio was 0.30 (30%) at Beulah.



## SECTION TWO

### AMBIENT AIR QUALITY DATA

#### SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
AMERADA HESS - TIOGA #1	1996	OCT-DEC	2187	41 12/19/15	38 12/02/02	34 12/19/17	30 12/02/05	10 12/02	7 12/19	1.7			18.8
AMERADA HESS - TIOGA #3	1996	OCT-DEC	2158	43 12/16/22	42 11/29/21	32 12/02/05	31 12/16/20	13 12/16	11 10/29	2.7			28.7
BEULAH	1996	OCT-DEC	2195	82 11/03/13	77 11/04/15	41 11/04/17	40 11/03/14	17 11/04	8 12/27	3.3			50.8
DGC #12	1996	OCT-DEC	2194	93 12/24/14	80 12/16/09	58 12/16/08	46 12/24/14	21 12/16	15 11/04	2.8			34.7
DGC #14	1996	OCT-DEC	2191	121 10/14/19	111 10/14/20	83 10/14/20	54 12/06/02	25 10/14	21 11/04	5.5			75.6
DGC #16	1996	OCT-DEC	2148	93 11/14/14	52 11/04/12	43 11/14/14	32 11/04/17	18 11/04	13 11/14	4.9			87.7
DGC #17	1996	OCT-DEC	2172	120 10/14/00	116 10/13/23	92 10/14/02	59 10/13/23	15 10/13	14 11/04	3.1			62.5
DUNN CENTER	1996	OCT-DEC	2191	49 12/22/06	43 12/22/07	43 12/22/08	19 11/22/11	10 12/22	6 12/27	1.6			17.8
FARGO RESIDENTIAL	1996	OCT-DEC	2195	28 12/26/12	26 12/26/13	21 12/26/14	14 12/26/08	10 12/26	6 11/26	1.8			31.7
HANNOVER	1996	OCT-DEC	2198	66 10/13/10	59 11/09/08	40 10/13/11	37 10/13/14	14 11/04	12 10/13	2.7			34.8
KOCH - MGP #3	1996	OCT-DEC	1245 ***	11 11/16/12	11 11/21/11	7 11/10/11	7 11/18/14	3 11/10	3 11/21	1.3			11.2
LITTLE KNIFE #5	1996	OCT-DEC	2196	41 12/22/06	32 12/22/07	28 12/22/08	26 11/22/14	12 12/22	7 11/22	1.7			25.5
MANDAN REFINERY - SPM	1996	OCT-DEC	2197	162 10/29/19	160 12/17/18	148 12/17/20	142 10/30/23	79 12/17	55 12/18	8.6			53.8
SHARON	1996	OCT-DEC	2188	23 11/27/02	19 11/27/01	19 11/27/02	14 11/27/05	8 12/25	6 11/27	1.5			18.3

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
TRNP - NU	1996	OCT-DEC	2191	21 10/02/21	21 10/02/22	18 10/02/23	16 10/03/02	8 10/03	5 12/27	1.6			23.8
WHISKEY JOE - SPM	1996	OCT-DEC	2156	26 11/18/10	20 12/22/01	18 11/18/11	15 12/22/02	7 12/22	5 11/22	1.6			19.8

The maximum 1-hour concentration is 162 ppb at MANDAN REFINERY - SPM on 10/29/19  
The maximum 3-hour concentration is 148 ppb at MANDAN REFINERY - SPM on 12/17/20  
the maximum 24-hour concentration is 79 ppb at MANDAN REFINERY - SPM on 12/17

\* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean not to be exceeded in a calendar year.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	PERIOD	OBS	5 - MINUTE		MAXIMA		# HOURS >600	% >MDV
				1ST DATE MM/DD/HH	2ND DATE MM/DD/HH	3RD DATE MM/DD/HH			
MANDAN REFINERY - SPM	1996	OCT-DEC	1350 ***	241 12/ 7/19	208 11/17/ 1	190 12/17/ 2			74.4

The maximum 5-minute concentration is 241 ppb at MANDAN REFINERY - SPM on 12/ 7/19

\* No standard is currently in effect.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Hydrogen Sulfide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		24 - HOUR		3 - MONTH		ARITH MEAN	1HR #>200	24HR #>100	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD	1ST MM	2ND MM				
AMERADA HESS - TIOGA #2	1996	OCT-DEC	2170	39 10/18/07	35 10/18/08	6 10/18	4 11/19	2 10	2 11	1.5			14.0
KOCH - MGP #4	1996	OCT-DEC	1263 ***	26 11/05/00	25 11/01/11	5 11/22	4 10/16	2 10	2 11	1.9			25.6
LITTLE KNIFE #5	1996	OCT-DEC	1590 ***	70 10/22/22	68 10/22/23	14 10/22	9 11/26	3 10	***	3.6			56.1
TRNP - NU	1996	OCT-DEC	2198	11 10/13/05	11 11/26/14	4 11/26	4 12/19	2 10	1 12	1.2			7.2
WHISKEY JOE - SPM	1996	OCT-DEC	2158	300 10/17/01	270 10/29/05	49 11/01	35 10/17	12 10	12 11	11.1	3		53.9

The maximum 1-hour concentration is 300 ppb at WHISKEY JOE - SPM on 10/17/01  
the maximum 24-hour concentration is 49 ppb at WHISKEY JOE - SPM on 11/01  
The maximum 3-month concentration is 12 ppb at WHISKEY JOE - SPM on 10

\* The State air quality standards are:

- 1) 10 ppm maximum instantaneous (ceiling) concentration not to be exceeded.
- 2) 200 ppb maximum 1-hour average concentration not to be exceeded more than once per month.
- 3) 100 ppb maximum 24-hour average concentration not to be exceeded more than once per year.
- 4) 20 ppb maximum arithmetic mean concentration averaged over three consecutive months.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ozone (PPB)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR			8 - HOUR			1HR #>120	8HR #>80
				1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH		
FARGO RESIDENTIAL	1996	OCT-DEC	2190	46 10/12/15	46 10/14/15	44 10/12/14	42 10/14/18	36 10/14/17	36 10/14/19		
HANNOVER	1996	OCT-DEC	2197	46 10/05/12	45 10/11/13	45 10/05/13	42 10/11/20	41 10/11/19	41 10/11/18		
SHARON	1996	OCT-DEC	2189	47 10/08/19	47 10/12/15	46 10/12/14	41 10/14/18	39 10/14/19	39 10/14/17		

The maximum 1-hour concentration is 47 ppb at SHARON on 10/08/19  
The maximum 8-hour concentration is 42 ppb at FARGO RESIDENTIAL on 10/14/18

\* The air quality standards for ozone are:

- STATE - 120 ppb maximum 1-hour concentration not to be exceeded more than once per year.  
FEDERAL - 120 ppb maximum 1-hour concentration with no more than one expected exceedance per year.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST	2ND		
				MM/DD/HH	MM/DD/HH		
BEULAH	1996	OCT-DEC	2191	38 11/27/21	37 11/27/19	4.3	71.3
DGC #12	1996	OCT-DEC	2184	67 10/30/17	50 10/30/16	3.9	96.0
DGC #17	1996	OCT-DEC	2179	71 10/13/21	61 10/13/23	3.0	82.0
FARGO RESIDENTIAL	1996	OCT-DEC	2193	42 12/13/23	42 12/19/20	9.0	88.1
HANNOVER	1996	OCT-DEC	2194	24 10/13/10	24 10/13/13	2.3	48.2
SHARON	1996	OCT-DEC	2185	18 11/27/02	16 11/27/01	2.3	57.3

The maximum 1-hour concentration is 71 ppb at DGC #17 on 10/13/21

\* The air quality standards are:

STATE - 53 ppb maximum annual arithmetic mean concentration.

FEDERAL - 53 ppb annual arithmetic mean concentration.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>2.5</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 50	AM>20	% >MDV
					1ST	2ND	3RD				
					MM/DD	MM/DD	MM/DD				
BEULAH	1996	OCT-DEC	15	3.7	27.4 11/05	11.5 10/12	11.4 12/17	8.9			93.3
BISMARCK RESIDENTIAL	1996	OCT-DEC	15	5.8	15.7 10/12	13.1 11/29	12.9 11/05	9.3			100.0

The maximum 24-hour concentration is 27.4 µg/m<sup>3</sup> at BEULAH on 11/05

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>150	AM>50	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
BEULAH	1996	OCT-DEC	15	4.4	45.3 11/05	22.0 10/12	12.9 12/17	11.5			100.0
BISMARCK RESIDENTIAL	1996	OCT-DEC	15	4.7	28.2 10/12	16.0 11/05	13.4 11/29	10.8			100.0
DICKINSON RESIDENTIAL	1996	OCT-DEC	14	0.3	51.2 12/29	23.3 10/12	10.2 10/18	9.1			64.2
FARGO RESIDENTIAL	1996	OCT-DEC	14	4.0	56.0 10/12	30.5 11/29	22.8 11/05	16.5			100.0
GRAND FORKS - NORTH	1996	OCT-DEC	15	4.2	96.3 10/12	33.5 10/24	29.6 11/29	20.7			100.0
SHARON	1996	OCT-DEC	15	1.7	37.4 10/12	24.1 11/17	23.4 10/18	13.1			93.3
WILLISTON RESIDENTIAL	1996	OCT-DEC	15	2.7	22.7 11/05	22.0 10/12	13.9 10/18	9.4			93.3

The maximum 24-hour concentration is 96.3 µg/m3 at GRAND FORKS - NORTH on 10/12

\* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m3 maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 µg/m3 expected annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>2.5</sub> Sulfates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>15.	AM>5.	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
BEULAH	1996	OCT-DEC	15	0.6	15.5 11/05	7.5 12/17	3.3 12/11	2.9	1		100.0
BISMARCK RESIDENTIAL	1996	OCT-DEC	15	0.5	9.5 11/29	4.1 12/29	3.9 12/05	2.7			100.0

The maximum 24-hour concentration is 15.5 µg/m3 at BEULAH on 11/05

\* No standard is currently in effect.



COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Sulfates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>15.	AM>5.	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
BEULAH	1996	OCT-DEC	15	0.8	39.5 11/05	8.0 12/17	3.6 12/11	4.6	1		100.0
BISMARCK RESIDENTIAL	1996	OCT-DEC	15	0.7	4.1 11/29	3.4 12/11	2.2 11/05	1.6			100.0
DICKINSON RESIDENTIAL	1996	OCT-DEC	14	0.5	3.4 12/23	2.8 12/29	2.3 11/29	1.5			100.0
FARGO RESIDENTIAL	1996	OCT-DEC	14	0.5	4.7 12/05	3.6 12/11	3.3 11/05	2.0			100.0
GRAND FORKS - NORTH	1996	OCT-DEC	15	0.5	3.9 12/05	3.8 12/11	3.4 11/05	1.9			100.0
SHARON	1996	OCT-DEC	15	0.6	5.1 12/11	2.8 11/29	2.3 12/17	1.7			100.0
WILLISTON RESIDENTIAL	1996	OCT-DEC	15	0.5	5.0 11/05	2.6 11/14	2.0 11/29	1.4			100.0

The maximum 24-hour concentration is 39.5 µg/m<sup>3</sup> at BEULAH on 11/05

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : PM<sub>2.5</sub> Sulfate/PM<sub>25</sub> Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I 1ST MM/DD	M A X I 2ND MM/DD	M A 3RD MM/DD	ARITH MEAN
BEULAH	1996	OCT-DEC	14	7.8	65.8 12/17	56.6 11/05	38.4 12/11	25.6
BISMARCK RESIDENTIAL	1996	OCT-DEC	15	5.1	72.5 11/29	57.4 12/05	55.4 12/29	30.7

The maximum 24-hour ratio is 72.5 percent at BISMARCK RESIDENTIAL on 11/29

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : PM<sub>10</sub> Sulfate/PM<sub>10</sub> Total Mass Ratio (Percentage)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I 1ST MM/DD	M A X I 2ND MM/DD	M A 3RD MM/DD	ARITH MEAN
BEULAH	1996	OCT-DEC	15	4.5	87.2 11/05	62.0 12/17	41.9 12/11	29.8
BISMARCK RESIDENTIAL	1996	OCT-DEC	15	3.5	30.6 11/29	29.3 12/11	26.5 12/29	16.9
DICKINSON RESIDENTIAL	1996	OCT-DEC	9 ***	3.9	66.7 12/23	57.5 11/29	23.9 11/05	23.4
FARGO RESIDENTIAL	1996	OCT-DEC	14	3.4	32.7 12/11	31.3 12/05	23.5 12/29	14.8
GRAND FORKS - NORTH	1996	OCT-DEC	15	2.1	39.7 12/17	26.2 12/23	25.3 12/11	14.1
SHARON	1996	OCT-DEC	14	3.2	40.5 12/11	37.5 12/23	32.2 11/29	17.3
WILLISTON RESIDENTIAL	1996	OCT-DEC	14	5.7	29.3 12/18	25.5 12/23	22.4 11/14	16.6

The maximum 24-hour ratio is 87.2 percent at BEULAH on 11/05

\* No standard is currently in effect.

\*\*\* Less than 80% of the possible samples (data) were collected.

## SECTION THREE

### EXCEEDANCE LISTINGS

### By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> (µg/m<sup>3</sup>)

The \* Identifies the Exceedances

----- SITE=WHISKEY JOE - SPM -----															
	DATE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
	October 17, 1996	100	<MDV				300*				1.3	178			
	October 29, 1996	500	<MDV	1			270*				2.1	149			
	October 29, 1996	600	<MDV				245*				2.5	148			

### By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> (µg/m<sup>3</sup>)

The \* Identifies the Exceedances

----- DATE=October 17, 1996 -----														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	100	<MDV				300*				1.3	178			
----- DATE=October 29, 1996 -----														
SITE	HOUR	1-HOUR SO2	3-HOUR SO2 BLOCK	24-HOUR SO2 BLOCK	5-MIN SO2 MAX	H2S	24-HOUR H2S BLOCK	NO2	O3	WS	WD	PM10	PM25	
WHISKEY JOE - SPM	500	<MDV	1			270*				2.1	149			
WHISKEY JOE - SPM	600	<MDV				245*				2.5	148			